

- Fig. 23. Six-spined variety of *D. aculeata*.
- Fig. 24. Front view of *D. spiralis*. Test composed of chitinoid cylinders. 24 *a*, side view of the same. 24 *b*, a portion of a test, showing the intermixture, in some cases, of minute diatoms.
- Fig. 25. *D. spiralis*. In this specimen, the test is entirely made up of ordinary mineral particles.
- Fig. 26. *D. symmetrica*, showing the rectangular hyaline plates: *a*, form of aperture; *b*, a more compressed specimen, in which the aperture (*e*) is nearly closed; *d*, a few detached plates.
- Figs. 27 to 33 represent the series of forms exhibiting the transition from the ordinary mineral and chitinoid elements of the test to the evolution of the colloid discs. (See pages 231-234.)
- Figs. 34 & 35. Varieties of *D. Arcella*.
- Fig. 36. Puckered test of *D. Arcella*, which has hitherto been regarded as a distinct species, under the name of *D. angulata*.
- Fig. 37. Front view of *D. Arcella*. In all these specimens the inverted lip is seen. Fig. *a* shows the invariably hexagonal pitting or reticulation of *D. Arcella*. (This can only be made out, however, in a mounted and crushed test, under a high power.)
- Fig. 38. Young test of *D. Arcella*.
- Fig. 39. This figure represents two *Diffugiæ* apparently united by their orifices in the manner which has been regarded by some writers as indicating "conjugation." The remarkable feature in the present example is, that the supposed conjugative act is being performed by individuals which, by the same writers, have been regarded as constituting distinct species.
- Fig. 40. In this case, a specimen of *Amæba villosa* was seen to seize the pseudopodia of the *Diffugia*, and force the greater portion of its own body into the *Diffugian* test. After a time it again emerged, the villous organ, which had become concealed within the test, being the last portion to leave it.
- Figs. 41 to 45. Varieties of *Euglypha*.
- Fig. 46 & 46 *a*. Side and front views of *Euglypha Enchelys*.
- Fig. 47. Bengal variety of same.
- Fig. 48. *Euglypha margaritacea* (Stony Stratford). Fig. *a*, showing the manner in which the test is made up of minute chitinoid discs, so arranged that each one is united to those surrounding it by six equidistant connecting bands. In *Diffugia Arcella* the test almost invariably fractures through the hexagonal spaces, as seen in fig. 34 *a*. In *D. margaritacea*, the line of fracture as invariably traverses the spaces *between* the discs, proving that they are the thickest and strongest portions of the structure.

BIBLIOGRAPHICAL NOTICES.

The Natural History of Tutbury. By Sir OSWALD MOSLEY, Bart., D.C.L., F.L.S. *Together with the Fauna and Flora of the District surrounding Tutbury and Burton-on-Trent*. By EDWIN BROWN. London: John Van Voorst, 1863.

As Englishmen, we of course have a vested interest in all that concerns "bitter beer," and accordingly, as English naturalists, the physical peculiarities of the district around Burton-on-Trent, in which the best of that blissful beverage is brewed, should have a double interest to us. We must therefore briefly record our thanks

to Sir Oswald Mosley and Mr. Edwin Brown for the volume before us. Though we cannot accord it, notwithstanding the magnificence with which it has been "got up," a position in the highest class of local faunas or floras, yet the work contains a good deal that is of importance, and is on the whole most creditable to the worthy Staffordshire Baronet and his coadjutor.

We should be sorry to say one word to discourage the appearance of books of a character similar to this; but at the same time we must state that, in perusing it, we are reminded of certain short-comings which make themselves prominent in this 'Natural History of Tutbury.' One of the most remarkable features in the fauna of this limited district is the herd of the so-called "wild cattle" which still exists in the park at Chartley, where, it is stated, "the breed has been carefully preserved." Now the history of this herd, together with those that roam under the like conditions in Chillingham and other parks, deserves much more attention than our authors seem to have paid to it. We are told that the breed "is still kept in its original purity"—an expression which is open to at least two interpretations. Does it mean simply that common domestic bulls and cows are prevented from mingling their blood with the "wild cattle"? or does it mean that the careful preservation of the breed "in its original purity" is effected by the timely elimination of any calves which show a tendency to "sport" from an assumed standard of perfection? On neither of these points is any information given us. If the former signification be the correct one, we should have liked to know what remedy is provided against the certain evil consequences of breeding in-and-in among a limited number of animals; while, if the latter interpretation be attached to the expression, it would be of the greatest importance to naturalists to learn what are the general tendencies of any variations that from time to time may arise. That such variations were wont to occur in the red-eared Chillingham herd we have good evidence for believing*; and it is difficult not to suppose that the same may have been observed in the black-eared animals so long cherished at Chartley.

In the matter of birds, the most remarkable fact recorded in the present volume is that of the occurrence of a pair of the American Red-eyed Flycatcher (*Vireosylva olivacea*, Bonaparte)—the "Whip-Tom-Kelly" of our dis-united cousins—in May 1859, at Chellaston, near Derby. Such notices are always worth mentioning, but we are far from subscribing to the common opinion that accidental visitors of this kind should be enrolled in our lists. One circumstance, which, if Mr. Brown's surmises are to be trusted, is, to say the least of it, extremely curious, is the capture, on the bank of the canal near Burton, in 1857, of a living specimen of the European Freshwater Tortoise. It will be remembered that, in a paper read before the

* See the excellent paper by Mr. L. Hindmarsh in the first series of the 'Annals,' vol. ii. pp. 274-284. For the convenience of those who interest themselves in our British "wild cattle," we may take this opportunity of referring to two other notices in the same series, vol. iii. pp. 241 & 356.

Cambridge Philosophical Society*, and subsequently in this Magazine, Mr. Alfred Newton recorded the discovery of the remains of two individuals of *Emys lutaria* at Wretham in Norfolk (Annals, Sept. 1862, p. 224), in a peat-bog, from which it may be concluded, fairly enough, that this species, at an epoch by no means very remote, inhabited England. Mr. Brown, in consequence, is inclined to think that his "specimen may, after all, be truly indigenous," suggesting that it "may be one of the last surviving, if not the last survivor, of the British Chelonians." We sincerely hope that some further traces of the species may be found in the valley of the Trent, to the exploration of which we are glad to hear Mr. Brown is especially devoting himself, so as to justify the suspicions we have just mentioned.

The ichthyology of the district presents nothing out of the common way, unless we mention the complete naturalization of the *Cyprinus auratus*, which is stated to thrive and breed abundantly "in waters at Derby connected with some of the manufactory steam-engines," the increased temperature of which, combined with the grease that escapes from the machinery, furnish the necessary requirements of food and warmth.

Very long lists of the lower animals and of the plants make up the chief bulk of the volume. In many orders of the former, and in almost all of the latter, they are merely nominal, with the addition of the localities (of which an index is meritoriously added) where the species occur. In other cases some judicious remarks are interspersed, showing Mr. Brown's powers of acute observation. These we must leave, only mentioning here the admirable paper in the Appendix, by that gentleman, on the genus *Acentropus*. The nine plates which illustrate the work are nicely executed, Mr. Wolf's bird and Mr. Ford's reptile being of course entitled to special attention. And, to return to the subject with which we commenced this article, we may mention that Sir Oswald gives (page 7) a satisfactory reason for the excellence of Burton ale.

Homes without Hands; being an Account of the Habitations constructed by various Animals, classed according to their principles of Construction. By the Rev. J. G. WOOD, M.A., F.L.S. London: Longman & Co. (In course of publication.)

Under the above-mentioned title that indefatigable compiler, the Rev. J. G. Wood, is issuing a work of which we are bound to say that the two Parts we have seen will not increase his credit as a naturalist. We do not like hazarding such an assertion without adducing something in support of our statement. What, then, are we to think of a man who speaks (part 2. p. 63) of a bird of the genus *Puffinus* as "allied" to the Puffin of English ornithology, the *Alca arctica* of Linnæus? While looking over Mr. Wood's lucubra-

* On the Zoology of Ancient Europe. London & Cambridge, 1862 (Macmillan).